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10/733,862	12/10/2003	Torsten Berger	SNS-013	8061

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EXAMINER	
CASCHERA, ANTONIO A	
ART UNIT	**PAPER NUMBER**
2628	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/733,862	BERGER ET AL.	
	Examiner	Art Unit	
	Antonio A. Caschera	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 July 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *56-67 and 69-75* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *56-67 and 69-75* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 June 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

1. Claims 56-67 and 69 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim(s) 56-67 and 69 is/are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing (Reference the May 15, 2008 memorandum issued by Deputy Commissioner for Patent Examining Policy, John J. Love, titled "Clarification of 'Processes' under 35 U.S.C. 101"). The instant claims neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 56, 57, 65-67 and 69-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dumesny et al. (U.S. Pub 2002/0154132 A1) in view of Piponi et al. ("Seamless texture mapping of subdivision surfaces by model pelting and texture blending," SIGGRAPH 2000. ACM Press/Addison-Wesley Publishing Co. New York, NY. pgs. 471-478. ISBN:1-58113-208-5).

In reference to claims 56 and 70, Dumesny et al. discloses a user interface, method and computer system operating a user interface, for applying a texture to a 3D graphic object and modifying the texture using several techniques (see paragraph 9, lines 1-5, paragraph 13, lines 1-7 and paragraph 76, lines 7-11). Dumesny et al. discloses allowing the user to select a defined region of a 3D graphic object and map the selected regions or polygons to a texture map (see paragraphs 13, 44, 47 and 48). Dumesny et al. discloses that after the user has selected the defined region in object space, an associated square region is defined and displayed in texture space (see paragraph 38, lines 5-9 and #110, 111 of Figure 11A). Note, the Office interprets such texture space square region equivalent to Applicant's "planar mesh" limitation. Dumesny et al. further discloses allowing the user to adjust the square region size and shape, in texture space, which inherently alters the mapping of the texture to the object space defined region (see paragraph 48, last 3 lines and paragraph 49). Further note, since the user defined region of the object is only part of the object and the alteration of the texture square region modifies the mapping onto such a user defined region, the Office interprets such a user defined region equivalent to the "patch" of Applicant's claims. Dumesny et al. also discloses assigning texture

map coordinate values to the corresponding polygons since when Dumesny et al. performs texture mapping, coordinates of object space and texture map space are associated and texture values are therefore also inherently associated (see paragraphs 4 and 5). Note, the Office interprets the "graphical value" of Applicant's claim equivalent to the texture value comprised within a texture map as seen in Figure 4 of Dumesny et al.. Further in reference to claim 70, Dumesny et al. discloses a storage medium or device, such as a CD-Rom, hard disk or magnetic disk for storing computer programs which, when executed, perform the above disclosed methods (see paragraphs 75-76). Also, Dumesny et al. discloses a processor for executing the above computer programs (see paragraph 75). Dumesny et al. discloses that after the user has selected the defined region in object space, an associated square region is defined and displayed in texture space (see paragraph 38, lines 5-9 and #110, 111 of Figure 11A). Dumesny et al. further discloses allowing the user to adjust the square region size and shape, in texture space, which inherently alters the mapping of the texture to the object space defined region (see paragraph 48, last 3 lines and paragraph 49). Dumesny et al. explicitly discloses, in the example of paragraph 49, that as the user transforms the square region, making it smaller in size, the object space user defined region is updated in real time so that the texture map is now stretched over the user defined region (see last 8 lines of paragraph 49). The Office interprets that if reducing the size of the texture space square region results in a loss of quality, because of stretching the texture map over the object, increasing the size of the texture space would conversely provide the effect of gaining quality since a smaller area of the object region would be covered by the texture. Dumesny et al. explicitly discloses allowing a user to select the region via one or more of particular polygons of a 3D graphic object to texture map data thereto (see paragraphs 44 and 47

and Figure 9B #94, 96 and 97). Dumesny et al. explicitly discloses that only if no polygons are selected by a user that all polygons forming the 3D object are subsequently textured (see last 3 lines of paragraph 44). Also, Dumesny et al. explicitly describes the 3D graphic object of which the user is capable of texture mapping, via the selection of a region of the graphic object, as having, "...arbitrarily complex surfaces," (see paragraph 14 more specifically lines 1-6, right column, page 2 and paragraph 67, lines 1-5). Even further Dumesny et al. explicitly discloses the user capable of modifying a texture mapping for an arbitrary set of the object's polygons (see paragraph 15). Dumesny et al. does not explicitly disclose the mapping of models based on a plurality of points of the mesh connected by mechanical modeling elements. Piponi et al. discloses a method for finding both optimal and intuitive texture mapping over almost all of an entire subdivision surface and combining the mappings together to produce a seamless result (see last 4 lines of the abstract, pg. 471). Piponi et al. discloses the method to, for example, involve adding springs to the boundary of a disk with opposing ends of the springs attached to a surrounding fixed frame (see pg. 473, left column last paragraph "There are a number…" and Figure 2.). Piponi et al. also explicitly discloses minimizing the energy of the collection of springs using further derived equations of motion, adding damping terms and running a dynamics solver until a steady state is achieved (see pg. 473, left column, last paragraph, lines 1-10 and Figure 2). Note, the Office interprets such "springs" of Piponi et al. equivalent to Applicant's "mechanical modeling elements" since further claims 65 and 73 define the "mechanical modeling elements" as such. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the texture mapping techniques of subdivision surfaces of Piponi et al. with the graphical object texturing techniques of Dumesny et

al. in order to create a seamless texture mapping of polygonal models and subdivision surfaces while still creating a system that is efficient in its processing and intuitive for users to operate (see pg. 471, right column, "Introduction" lines 6-8 of Piponi et al. & see pg. 472, left column, lines 23-40, "Using a solid…" of Piponi et al.). (see *Response to Arguments* below).

In reference to claims 57 and 71, Dumesny et al. and Piponi et al. disclose all of the claim limitations as applied to claims 56 and 70 respectively above in addition, Dumesny et al. discloses graphically rendering the object in real-time as the user modifies texture values (see paragraph 49).

In reference to claims 65, 66, 73 and 74, Dumesny et al. and Piponi et al. disclose all of the claim limitations as applied to claims 56 and 70 respectively above. Piponi et al. discloses the method to, for example, involve adding springs to the boundary of a disk with opposing ends of the springs attached to a surrounding fixed frame (see pg. 473, left column last paragraph "There are a number…" and Figure 2.).

In reference to claims 67 and 75, Dumesny et al. and Piponi et al. disclose all of the claim limitations as applied to claims 56 and 70 respectively above. Piponi et al. also explicitly discloses minimizing the energy of the collection of springs using further derived equations of motion, adding damping terms and running a dynamics solver until a steady state is achieved (see pg. 473, left column, last paragraph, lines 1-10 and Figure 2).

In reference to claim 69, Dumesny et al. and Piponi et al. disclose all of the claim limitations as applied to claim 56 above. Dumesny et al. discloses allowing the user to select a defined region of a 3D graphic object and map the selected regions or polygons to a texture map

(see paragraphs 13, 44, 47 and 48). Note, the Office sees no indication in Dumesny et al. of performing geometric projection when mapping the texture onto the 3D object in Dumesny et al.

In reference to claim 72, Dumesny et al. and Piponi et al. disclose all of the claim limitations as applied to claim 71 above in addition, Dumesny et al. explicitly discloses utilizing a CRT as the display device (see paragraph 2).

3. Claims 58-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dumesny et al. (U.S. Pub 2002/0154132 A1), Piponi et al. ("Seamless texture mapping of subdivision surfaces by model pelting and texture blending," SIGGRAPH 2000. ACM Press/Addison-Wesley Publishing Co. New York, NY. pgs. 471-478. ISBN:1-58113-208-5) and further in view of Leather et al. (U.S. Patent 6,707,458 B1).

In reference to claim 58, Dumesny et al. and Piponi et al. disclose all of the claim limitations as applied to claim 57 above however, neither Dumesny et al. nor Piponi et al. explicitly disclose modifying a voxel representation of the object according to the texture values. Leather et al. discloses a method and apparatus for texture tiling in a graphics system (see column 4, lines 38-40) wherein the texture is configured in a tile format (see column 4, lines 1-9 and Figure 20A). Leather et al. further discloses performing embossing type bump mapping effects on incoming processed texture coordinates (see columns 9-10, lines 56-3), the bump mapping further comprising a bump mapping displacement associated with each texture coordinate (see column 10, lines 8-20). Note, the Office interprets the depth/height of the object being altered using the texture bump mapping displacement values of Leather et al., equivalent to the modifying of a voxel representation of the object using the "graphical values" of Applicant's claim. It would have been obvious to one of ordinary skill in the art at the time the invention

was made to implement the texture tiling techniques of Leather et al. with the graphical object texturing techniques of Dumesny et al. and texture mapping techniques of subdivision surfaces of Piponi et al. in order to create realistic looking surface detail on rendered objects while processing in an efficient and advantageous manner (see column 3, lines 35-36 and columns 3-4, lines 66-4 of Leather et al.).

In reference to claim 59, Dumesny et al. and Piponi et al. disclose all of the claim limitations as applied to claim 56 above however, neither Dumesny et al. nor Piponi et al. explicitly disclose the texture being of a tiled type. Leather et al. discloses a method and apparatus for texture tiling in a graphics system (see column 4, lines 38-40) wherein the texture is configured in a tile format (see column 4, lines 1-9 and Figure 20A). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the texture tiling techniques of Leather et al. with the graphical object texturing techniques of Dumesny et al. and texture mapping techniques of subdivision surfaces of Piponi et al. in order to create realistic looking surface detail on rendered objects while processing in an efficient and advantageous manner (see column 3, lines 35-36 and columns 3-4, lines 66-4 of Leather et al.).

In reference to claim 60, Dumesny et al., Piponi et al. and Leather et al. disclose all of the claim limitations as applied to claim 59 above. Leather et al. discloses a method and apparatus for texture tiling in a graphics system (see column 4, lines 38-40) wherein the texture is configured in a tile format (see column 4, lines 1-9 and Figure 20A). Leather et al. also explicitly discloses improving on the past technique of texture tiling, which used to draw a polygon for each desired tile meaning each tile was constrained to align with a polygon (see column 4, lines 17-20).

In reference to claim 61, Dumesny et al., Piponi et al. and Leather et al. disclose all of the claim limitations as applied to claim 59 above. Dumesny et al. discloses graphically rendering the object in real-time as the user modifies texture values (see paragraph 49). Leather et al. discloses a method and apparatus for texture tiling in a graphics system (see column 4, lines 38-40) wherein the texture is configured in a tile format (see column 4, lines 1-9 and Figure 20A).

In reference to claim 62, Dumesny et al. and Piponi et al. disclose all of the claim limitations as applied to claim 56 above. Dumesny et al. discloses assigning texture map coordinate values to the corresponding polygons since when Dumesny et al. performs texture mapping, coordinates of object space and texture map space are associated and texture values are therefore also inherently associated (see paragraphs 4 and 5). Note, the Office interprets the "graphical value" of Applicant's claim equivalent to the texture value comprised within a texture map as seen in Figure 4 of Dumesny et al.. Further, the texture value output from a texture map is well known in the art to be a color value as explicitly shown in Leather et al. (see Figures 7A and 7B). It would have been obvious to one of ordinary skill in the art at the time the invention was made to interpret the texture value, associated with the selected texture coordinate of a texture map, of Dumesny et al. and texture mapping techniques of subdivision surfaces of Piponi et al., with a color value since it is well known in the art that a texture map may hold color values, as shown in Leather et al. (see column 10, lines 31-36 of Leather et al.). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the texturing techniques of Leather et al. with the graphical object texturing techniques of Dumesny et al. and texture mapping techniques of subdivision surfaces of Piponi et al. in order

to create realistic looking surface detail on rendered objects while processing in an efficient and advantageous manner (see column 3, lines 35-36 and columns 3-4, lines 66-4 of Leather et al.).

In reference to claim 63, Dumesny et al. and Piponi et al. disclose all of the claim limitations as applied to claim 56 above. Although Dumesny et al. discloses assigning texture map coordinate values to corresponding polygons (see paragraphs 4 and 5), neither Dumesny et al. nor Piponi et al. explicitly disclose the texture map comprising an embossing pattern. Leather et al. discloses a method and apparatus for texture tiling in a graphics system (see column 4, lines 38-40) wherein the texture is configured in a tile format (see column 4, lines 1-9 and Figure 20A). Leather et al. further discloses performing embossing type bump mapping effects on incoming processed texture coordinates (see columns 9-10, lines 56-3), the bump mapping further comprising a bump mapping displacement associated with each texture coordinate (see column 10, lines 8-20 and Figures 7A, 7B). Further note, the Office interprets the displacement value of Leather et al. to inherently define an adjustment along a normal to the surface of a virtual object of Applicant's claim. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the texturing techniques of Leather et al. with the graphical object texturing techniques of Dumesny et al. and texture mapping techniques of subdivision surfaces of Piponi et al. in order to create realistic looking surface detail on rendered objects while processing in an efficient and advantageous manner (see column 3, lines 35-36 and columns 3-4, lines 66-4 of Leather et al.).

In reference to claim 64, Dumesny et al., Piponi et al. and Leather et al. disclose all of the claim limitations as applied to claim 63 above. Dumesny et al. discloses graphically rendering the object in real-time as the user modifies texture values (see paragraph 49). Leather et al.

discloses a method and apparatus for texture tiling in a graphics system (see column 4, lines 38-40) wherein the texture is configured in a tile format (see column 4, lines 1-9 and Figure 20A).

Response to Arguments

4. The cancellation of claims 68 and 76 is noted.

5. Applicant's arguments filed 07/11/08 have been fully considered but they are not persuasive.

In reference to claims 56-67 and 69-75, Applicant argues that none of the cited prior art of record explicitly disclose the limitation of the user-defined region being of arbitrary shape (see pages 7-9 of Applicant's Remarks). Further, Applicant responds to Examiner's previous remarks directed to examples of "arbitrarily shaped user-defined regions" as described within the specification by stating that such language of the specification actually narrows the term (see bottom of page 7 of Applicant's Remarks).

In response, to the above argument as per claim 56 (and all dependent upon claim 56 claims) along with claim 70 (and all dependent upon claim 70 claims), Dumesny et al. explicitly discloses allowing a user to select a region via one or more of particular polygons of a 3D graphic object to texture map data thereto (see paragraphs 44 and 47). Further, Dumesny et al. explicitly discloses that only if no polygons are selected by a user that all polygons forming the 3D object are subsequently textured (see last 3 lines of paragraph 44). Even further however, Dumesny et al. explicitly describes the 3D graphical object of which the user is capable of texture mapping, via a selection of a region of the graphic object, as having, "...arbitrarily complex surfaces," (see paragraph 14 more specifically lines 1-6, right column, page 2 and

paragraph 67, lines 1-5). Even further Dumesny et al. explicitly discloses the user capable of modifying a texture mapping for an arbitrary set of the object's polygons (see paragraph 15). Therefore, the Office interprets at least Dumesny et al. of the combination of Dumesny et al. and Piponi et al. to disclose the argued feature since the arbitrarily complex surfaces and the modified texture for an arbitrary set of the object's polygons can surely be seen equivalent to Applicant's arbitrarily-shaped region of the claims.

Also, in reference to Applicant's description of such a term from the specification, the specification utilizes the open-ended terms, "may" or "such as" to describe certain possibilities or examples of arbitrarily-shaped user-defined regions but doesn't make an exact equivalency to the term (see paragraphs 22 and 102). The Office is not stating that such passages broaden the term but in contrast is stating that such terms are "open-ended" meaning they do that set a stringent range or examples of values of what can be considered "arbitrarily-shaped user-defined regions." Therefore, in view of this, the Office states that a broad interpretation of the term "arbitrarily-shaped user-defined region" can reasonably be applied while not necessarily conforming to what is described in the specification. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Therefore, the Office believes its interpretation of Dumesny et al. to be just especially when taking the term in its broadest sense in view of the specification.

Lastly, with reference to Applicant's arguments directed towards Piponi and Leather not disclosing the feature of texture mapping user-defined arbitrarily-shaped regions (see pages 8-9 of Applicant's Remarks), the Office points out that Piponi was introduced to teach the limitation

of mapping of models based on a plurality of points of the mesh connected by mechanical modeling elements (see above rejection of claims 56 and 70). Further, Leather was introduced to teach the limitation of modifying a voxel representation of the object according to the texture values (see above rejection of claim 58). The limitation that Applicant argues against such references was described by the teachings of Dumesny et al. and therefore it seems that Applicant is attacking each reference individually. In response to Applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Antonio Caschera whose telephone number is (571) 272-7781. The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung, can be reached at (571) 272-7794.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

571-273-8300 (Central Fax)

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (571) 272-2600.

/Antonio A Caschera/

Examiner, Art Unit 2628

Temporary Full Signatory Authority

10/24/08